

# **Inventaire: Enhancing Inventory Accuracy for MSME E-Commerce Through a Perpetual Inventory System**

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## **Abstract**

This study introduces "Inventaire," a perpetual inventory system designed to enhance the accuracy of inventory records for MSME e-commerce distribution channels. Through the integration of barcode scanning and an SQL-based desktop application, this system enables real-time monitoring for accurate and efficient inventory management, especially for non-perishable goods. The study employed a quantitative approach, surveying 200 respondents from an MSME e-commerce sector to evaluate critical factors impacting inventory accuracy. Significant factors identified include staff skill, stock audit systems technology, and inventory coding, which contribute positively to inventory record accuracy. Factor analysis and correlation methods were utilized to examine relationships among identified factors, revealing that effective inventory management, robust control strategies, and minimized record inaccuracy are essential to optimizing inventory accuracy. The results indicate that leveraging a perpetual inventory system with advanced barcode technology and structured inventory practices can significantly reduce errors in inventory records, ultimately improving operational efficiency in MSME e-commerce settings.

## **Keywords**

Perpetual Inventory System, Inventory Record Accuracy, Barcode System, Factor Analysis, MSME.

## **Biographies**

**Aldrin Kyle F. Pascual** is a graduating student in Industrial Engineering from Adamson University, Batch 2023. Aldrin is a driven individual, keen to make impactful contributions to the industry. With a passion for process optimization, efficiency improvement, and problem-solving, he brings exceptional attention to detail and organizational skills. Committed to continuous learning and exploring emerging industrial practices, Aldrin aims to introduce fresh perspectives and innovative solutions to the field.

**Kyle Matthew B. Zamora** is also a graduating Industrial Engineering student from Adamson University, Batch 2023. During his internship at BoozyLife Inc. in September 2022, he gained hands-on experience, applying tools such as process mapping and standard operating procedure improvement to real-world scenarios. With a dedication to lifelong learning, Kyle is eager to bring his expertise and enthusiasm for emerging industry practices into professional environments, aiming to deliver innovation and practical solutions to complex challenges.

**Rommel C. Dela Cruz** holds a Master of Science in Industrial Engineering, specializing in Production Systems, from the University of the Philippines – Diliman. He has held various leadership roles, including as the Chief of the Research Institute for Strategic Foresight and Innovation's Center for Futures Innovation. With a solid background in Quality Assurance, he brings a wealth of knowledge in optimizing production systems and an extensive understanding of best practices within quality management.

**Ricardo Rabang** is a seasoned faculty member in the Department of Industrial Engineering at Adamson University, Manila, Philippines. With a B.S. in Industrial Engineering and an M.S. in Engineering/Industrial Management from Adamson University, Ricardo brings over 36 years of expertise in the oil and gas industry, including key roles in engineering and management. His career with Saudi Aramco and training in the Middle East, USA, and Europe have provided him with a robust technical and managerial foundation. A certified professional industrial engineer, business continuity expert, Lean Six Sigma Master Black Belt, consultant, and certified scuba diving instructor, Ricardo offers a rare blend of technical knowledge and practical insight across various domains.